Examining the Relationship Between Interactivity on the Internet and the Four Public Relations Models in Federal Government Agencies

by

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The University of Texas at Austin, 1999

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Little research has been done on the concept of interactivity as it relates to the World Wide Web, and none has been in the context of the four models of public relations as defined by James Grunig. This thesis is a quantitative analysis of federal agency Web sites. Eighteen sites were content analyzed and assigned interactivity scores. These scores were correlated with public relations model mean scores gathered in a previous study. No significant correlations were found between the various interactivity scores and the models of public relations. It is hypothesized that this lack of significance is due to public relations practitioners applying the models situationally. Because the World Wide Web demands high levels of interactivity, two-way models of public relations will be used regardless of the dominant model used by the agency as a whole.

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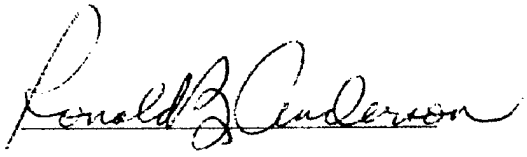

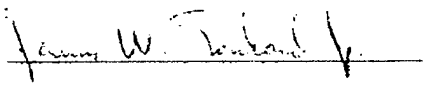

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Chapter One: Introduction

An important step in the development of public relations research was taken by James Grunig in 1975, when he surveyed 216 public relations practitioners in the Baltimore-Washington area on their public relations activities. His study, to be published in 1976, would eventually lead to a theoretical framework for public relations researchers known as the four models of public relations.

As these four models were further and further refined over the years, so too were the methods of communication – typewriters became computers, telephones became fax machines, and mail became electronic and lightning quick.

Communication scholars, such as Rice and Williams (1984), have recognized the need to reconceptualize communication research due to these technological refinements. Rogers and Chafee (1983) similarly said "scholars are going to have to shift toward models that accommodate the interactivity of most of the new communication technologies."

Perhaps the most interactive of these "new communication technologies" is the Internet. While the concept of interactivity has taken many forms and a perfect definition is elusive, few will argue that the Internet, in its various guises

of the World Wide Web, newsgroups, electronic mail, and Internet Relay Chat, is the champion of interactivity.

And so the question, taking a cue from Rogers and Chafee, becomes, how will the four models of public relations accommodate the interactivity of the Internet? This study will attempt to answer this question by conducting a content analysis of federal agency World Wide Web sites and comparing the results to the models of public relations used by the agencies.

Chapter Two: Literature Review

As stated, J. Grunig's 1976 study was based on a survey of 216 Baltimore-Washington public relations practitioners in which they estimated the frequency their organizations used 16 common public relations procedures. He then used Thayer's (1968) concepts of synchronous communication (the purpose of which is to synchronize the behavior of publics to benefit the organization) and diachronic communication (the purpose of which is to negotiate a state of affairs that benefits both organization and publics) to group the 16 procedures into two theoretical patterns of behavior.

After a two studies attempted to correlate these patterns of behavior to several organizational structural variables (J. Grunig, 1976; L. Grunig, 1985a), J. Grunig concluded that the synchronic-diachronic conceptualization was inadequate and introduced with Hunt (1984) four models of public relations. The models are known as: (1) the press agentry/publicity model, (2) the public information model, (3) the two-way asymmetrical model, and (4) the two-way symmetrical model.

J. Grunig (1984) noted eight characteristics of these models. They are purpose, organizational goal, public relations contribution to goal, nature of communication, communication model, nature of research, leading historical

figures, and where practiced today. Table 1 summarizes each model and its characteristics.

The first two are both one-way models of communication, the difference being that truth is not essential with the press agentry/publicity model. This kind of public relations is practiced today in sports, theatre, and product promotion. The public information model, also a simple source to receiver model but where the truth is important, can be found in the public relations often practiced by government agencies, nonprofit associations, and some businesses.

The two-way asymmetrical model is a kind of press agent model that is described as scientific persuasion. Practitioners of this model use social science theory and research about attitudes and behavior to persuade publics. We see this kind of public relations mostly in competitive business.

Finally, two-way symmetrical public relations is about mutual understanding between organizations and publics. Public relations practitioners, when using this model, act as mediators between organizations and their publics. It focuses on communication theory rather than persuasion theory. This kind of public relations shows up in regulated business and is considered by most to be the ideal form of public relations because change can occur on both sides of the organization-public organization. It's a dialogue in which if any persuasion

Table 1

Characteristics of Four Models of Public Relations

	Model			
Characteristic	*Press Agentry/ Publicity*	*Public Information*	*Two-Way Asymmetric*	*Two-Way Symmetric*
Purpose	Propaganda	Dissemination of of information	Scientific persuasion	Mutual understanding
Organizational Goal	Environmental Control/ Domination	Environmental Adaptation/ Cooperation	Environmental Control/ Domination	Environmental Adaptation/ Cooperation
PR Contribution to Goal	Advocacy	Dissemination of Information	Advocacy	Mediation
Nature of Communication	One-way; complete truth not essential	One-way; truth important	Two-way; imbalanced effects	Two-way; balanced effects
Communication Model	Source → Rec.	Source → Rec.	Source → Rec. ← Feedback	Group → Group ←
Nature of Research	Little; "counting house"	Little; readability, readership	Formative; evaluative of attitudes	Formative evaluative of understanding
Leading Historical Figures	P.T. Barnum	Ivy Lee	Edward L. Bernays	Bernays, educators, professional leaders
Where Practiced Today	Sports, theatre, product promotion	Government, nonprofit associations, business	Competitive business;business; agencies	Regulated agencies
Estimated Percentage of Organizations Practicing Today	15%	50%	20%	15%

Source: J. Grunig and Hung (1984: 22) and J. Grunig (1987: 9)

occurs, it's just as likely to be the public persuading the organization to change as it is the other way around.

These models of public relations, and the assumptions made about what types of organizations use which models, have been tested many times over the past 16 years. Most of the work has appeared in the form of theses and dissertations done at the University of Maryland, College Park, under the tutelage of J. Grunig. Thirteen studies, consolidated by J. Grunig and L. Grunig in 1989 and appearing in Table 2, have been conducted that produced mean scores on the indices of the four models for different kinds of organizations.

Comparing Tables 1 and 2, we can see that J. Grunig and Hunt were sometimes accurate in their predictions but often times totally wrong. In the case of sports public relations, their prediction of a predominant use of press agentry was supported by Maymi's (1987) case studies of three sports organizations.

However, their prediction that public information would be the most common model of public relations was found, for the most part, to be inaccurate. The studies in which practitioners from all types of public relations entities were either surveyed or interviewed (J. Grunig, 1984; Ossareh, 1987; L. Grunig, 1985a; Wetherell, 1989) showed press agentry to be the most common model practiced. When looking at studies of specific organizations, the results were generally the

Table 2

Mean Scores on Indices of Four Models of Public Relations in Different Types of Organizations from 13 Studies

	N	Press Agentry	Public Information	2-Way Assym.	2-Way Symm.
General Samples of Practitioners					
J. Grunig (1984) [a]	52	3.23	2.77	3.16	2.90
L. Grunig (1985a) [a]	75	3.12	2.92	2.95	2.81
Ossareh (1987) [a]	421	3.18	2.81	3.11	2.95
Wetherell (1989) [b]	378				
Actually Practiced		9.76	9.18	7.65	7.89
Prefer to Practice		8.65	8.16	11.82	11.70
Knowledge to Practice		11.35	13.32	8.39	9.07
Sports Organizations					
Maymi (1987) [b]	3	18.65	13.61	5.85	5.23
Hospitals					
Fabiszak (1985) [a]	180	3.30	3.05	3.04	3.06
Blue Cross/Blue Shield Plans					
Buffington (1988) [a]	10	3.39	2.88	3.23	3.21
Associations					
McMillan (1984) [a]	116	3.21	2.89	2.90	2.88
Federal Government Agencies					
E. Pollack (1984) [a]	310	2.95	3.01	2.65	2.73
State Government Agencies					
Turk (1985) [a]	12	2.80	3.13	2.82	2.92
Scientific Organizations					
R. Pollack (1986) [a]					
Total	178	2.90	3.22	2.89	3.02
Government	34	2.98	3.50	2.77	3.04
Nonprofit	62	2.91	3.28	2.76	3.04
Corporations	77	2.87	3.06	3.03	2.99

Reporter Ratings of Government Science Agencies					
Habbersett (1983) [a]	249	3.69	4.00	3.40	2.66
Nelson (1986) Case Studies [a]					
Bank	1	3.26	2.87	3.13	3.76
Telecommunications Co	1	3.85	2.85	2.85	3.13

[a] Based on a Likert-type 5 point scale.
[b] Based on an open-ended fractionation with a square-root transformation. A score of 10 represents an average model for an average organization.

Source: J. Grunig and L. Grunig (1989: 304)

same with associations (McMillan, 1984 and 1987), hospitals (Fabiszak, 1985), and Blue Cross and Blue Shield medical plans (Buffington, 1988).

This was not the case, however, with government agencies. Indeed, public information was, as J. Grunig and Hunt suggested, the most common model of public relations used, with press agentry running a close second (Habbersett, 1983; E. Pollack, 1984; R. Pollack, 1986; Turk, 1985).

E. Pollack's study broke down the results for each government agency whose practitioners she surveyed. As seen in Table 3, the results mostly agreed with J. Grunig and Hunt's predictions about government agencies. Most mean scores are greatest in the press agentry and public information columns. However, E. Pollack pointed out that her study showed a trend toward two-way symmetrical public relations. Further, she stated that most federal government agencies should practice the two-way symmetrical model of public relations in order to be in equilibrium with their environments. She said:

> By changing to a two-way symmetric model, government agencies would be able to produce a more effective communications program. Both the agencies and their publics would gain from this. The agencies would pay more attention to the needs of their publics; research would be conducted to gain a better understanding of those needs. The two-way symmetric model also would allow public relations practitioners to act as mediators between the agencies and the publics, rather than as press agents or public information officers in the agencies (p. 95).

While the World Wide Web and the Internet were not around when E. Pollack did her study (or in the form we know it as today), J. Grunig and L.

Table 3

Mean Scores on Four Models of Public Relations for Twenty-Two Federal Government Departments

	Press Agentry	Public Information	2-Way Asymm.	2-Way Symm.
The White House	3.25	3.00	2.44	2.06
Department of State	2.71	2.77	2.82	2.89
Department of the Treasury	3.13	2.92	2.68	2.52
Department of Commerce	3.29	3.22	2.35	2.77
Department of Health and Human Services	3.01	3.08	2.71	2.24
Department of Justice	2.86	3.11	2.80	3.00
Department of Housing and Urban Development	3.94	2.88	3.31	2.69
Department of Labor	2.98	3.31	2.33	2.49
Department of the Interior	3.27	3.35	2.96	2.68
Department of Education	2.46	2.46	2.25	2.50
Department of Agriculture	2.93	3.30	2.72	2.96
Department of Transportation	2.86	3.22	2.58	2.78
Department of Energy	2.54	3.00	2.21	2.54
Department of Defense	2.93	2.93	2.76	2.74
Department of the Army	2.81	2.74	2.86	3.15
Department of the Navy	3.02	2.84	2.69	2.61

Department of the Air Force	3.11	2.80	2.88	2.78
National Aeronautical and Space Administration	2.69	3.08	2.30	2.69
Independent Federal Agencies	2.88	3.01	2.62	2.74
The Judicial Branch	3.13	3.13	2.13	2.38
The Legislative Branch	2.72	3.22	1.94	2.56
Delegation of the Commission of the European Communities	3.75	2.81	2.75	1.75
OVERAL MEAN	2.95	3.01	2.65	2.73
F	1.1	1.6_a	1.7_a	1.5
SCALE	1-5	1-5	1-5	1-5

$_a p < .05$

Source: E. Pollack (1984: 58-59)

Grunig (1989) did address technology in relation to the models of public relations in their literature review. The authors use Thompson's (1967) theory on the subject defining long-linked technology as that which employs techniques that are linked serially to one another so that one cannot begin until the previous one is completed; mediating technology as that which links people who are otherwise independent; and intensive technology describing when organizations focus several techniques on accomplishing a major goal. Two studies by L. Grunig (1985a and 1985b) examined correlations between these types of technology and various public relations variables. The results suggested that technology is an inconsistent explanatory variable for public relations behavior, and J. Grunig and L. Grunig no longer attempted to incorporate it into their model of public relations behavior.

J. Grunig and L. Grunig's conclusion is interesting, and one must wonder whether this would hold true when one considers the Internet and its high level of interactivity. They did note that individual circumstances often times dictate what kind of public relations is implemented, saying:

> ...organizations do and should use different models strategically to deal with different public relations problems and different sources of conflict in their environments. At the meso level of the public relations department, the models function as situational strategies for dealing with different publics and different public relations problems. A single organization, therefore, employs different models as the situation changes (p. 59).

While the World Wide Web isn't always considered a "public relations problem," the case could certainly be made that organizations are probably considering the capabilities and publics of the Web and using public relations models (or "situational strategies") that are perhaps not the model used by the organization as a whole.

Next this author will examine the influence the Internet has had on the public relations industry, how public relations practitioners are using the technology, and what is meant by the term.

The Internet and Public Relations

"It would be charitable to characterize the use of the Internet for public relations as in its infancy. In fact, the profession's use of the Internet can better be described as embryonic."

So begins Shel Holtz's book *Public Relations on the Net* (1999). While this view may sound pessimistic, it is certainly an obvious point to those who have spent any amount of time surveying the subject. Of course, things are changing quickly, just as the entire world of technology and the Internet is constantly evolving. But the conclusion that the public relations profession is not using the Internet to its full strategic potential still holds true today.

Holtz says most public relations activities on-line are not strategic, not measurable, and not targeted toward specific audiences or constituencies. He of course notes that some in the industry are adopting creative and strategic uses of the Internet, to include use of the company's home page to communicate the company's most important messages, to address an emerging crisis, and to distribute news releases and speeches.

In the end, Holtz's book is aimed at teaching practitioners how to achieve a goal common to most public relations practitioners on the Web: using the Internet to facilitate the relationship between an organization and its strategic publics. Such a concept is not new. This facilitation of public relationships is often the cited definition of public relations. It's also a common theme when we speak of the concept of interactivity.

The Journals Catch On

In May 1995, many public relations practitioners got their first primer about the topic they'd been hearing about from the media (and often times their kids) when they received their *Public Relations Journal* in the mail. That particular issue was a review of technology and included articles with titles such as "Electronic Monitoring Provides Early Warning of News Breaks," "How Tech-friendly Companies Communicate," "Hi-tech Firms Launching Clients into

Cyberspace," "Public Relations in Cyberspace," and the all-important "Guideposts for Going On-line."

Similar articles appeared in several other journals around this time, just as the Internet began to enter the public consciousness. Looking at these articles on public relations and the Internet, one can fit them into one of three categories: overviews, articles on specific Internet "tools," and possible problems for public relations practitioners caused by the Internet.

Many of the first articles, reasonably enough, were simply educational—designed to teach the layman all about this new on-line world. They were overviews, defining terms and doing things like explaining what a "home page" was and how one could send a fax through their computer. Some explained how agencies were changing their current practices and making preparations to deal with the Internet (Dorf, 1995); others were inventories of all the new tools associated with the Internet, serving as cyber-dictionaries defining terms and explaining how such functions could be used for public relations purposes (Bovet, 1995; Bobbitt, 1995). As time went on, similar overview articles appeared from time to time. Many came out when Holtz's (1999) book was published, reviewing his major points (Marken, 1999; Rosen, 1999).

Similar to the overview articles in terms of their "teaching" approach were those that focused on one specific Internet tool. These articles examined

specific applications and information sources such as electronic mail (Dern, 1997; Marken, 1997), PR Newswire's Web site (Bowen, 1998), and the electronic mail list server PRForum (Thomsen, 1996).

The third type of articles to appear were those dealing with the problems and pitfalls of the Internet for public relations practitioners. These articles addressed such problems as damaging postings and rumors sent via chat rooms, newsgroups and other on-line bulletin boards (Strenski, 1995; Ross, 1995; Basso, 1997; Rapaport, 1997; *Investor Relations Business*, 1998), lack of privacy in communication (Strenski, 1995), on-line fakery (Ross, 1995; Gibbs, 1998), "traffic jams" on the Internet, security of on-line transactions, and copyright infringement (Ross, 1995).

Public Relations Adopts the Internet

Public relations has increasingly accepted the Internet as a part of, if not invaluable to, effective communications. A study funded by MCI Communications Inc. and conducted by University of South Alabama professor Donald K. Wright surveyed 236 of the nation's senior-level public relations officers in 1998. Among the study's findings:

> - 70 percent believed a company's communications and public relations function should control all content of corporate Web sites, including those on the Internet, intranet and extranet, that have public relations implications;

- 34 percent of those surveyed believed the public relations function should control all corporate Web site content;

- 89 percent believed the Internet will change how public relations resources are deployed at their companies within the next three years;

- 91 percent thought electronic mail has become a fundamental means of internal and external messaging within their companies; and

- 92 percent said their companies have developed policy guidelines for managing their organization's Web site development, with 70 percent saying the policies are written and the remaining 30 percent saying they're unwritten.

Corporate communications practitioners aren't the only ones recognizing the utility of the Internet. Public relations agencies have also entered the fold and adopted this new technology. A survey (*Public Relations Quarterly*, 1998) of 953 Counselor Academy members (334 responses) was conducted by The Bohle Company, an independent Los Angeles-based technology public relations agency, and found that public relations agencies are relying on the Internet as an integral part of day-to-day operations. Ninety-five percent of agencies provide their employees with e-mail accounts, while 82 percent provide them Internet access from their desktops.

Interactivity

Why such interest in the Internet? What makes it such a great tool for public relations? The answer is simple: interactivity.

A pre-Internet (as we know it) article by Carrie Heeter (1989) made great strides in conceptualizing interactivity. Noting that the term was often bandied about but rarely defined when scholars spoke of new technologies, she proposed that interactivity, as it relates to communication technologies, is a multidimensional concept. Her set of six dimensions of interactivity include complexity of choices available, effort users must exert, responsiveness to the user, monitoring information use, ease of adding information, and facilitation of interpersonal communication.

Following Heeter's lead, two significant studies on interactivity examined the Internet. Although done virtually at the same time, the first, by Louisa Ha and E. Lincoln James, was published in Fall 1998. The authors point out that interactivity is a critical concept in computer-mediated communication, as it is seen as the key advantage of the medium. From there they go on to offer the many different definitions, conceptions and forms that interactivity has taken from all kinds of disciplines and fields of study. They discuss the concept from an interpersonal communication perspective, from a mechanical perspective, using an artistic approach, and in a business setting. A common theme is the emphasis on the "exchange" and "mutuality," assuming the audience is interested in participating in conversations with the communicator. (This notion is of course central to the two-way symmetrical model of public relations.)

However, Ha and James think this is an invalid assumption when it comes to computer-mediated interactivity. Discarding what the authors term the "unrealistic notion of mutual interest in two-way communication," they propose that interactivity is the extent to which the communicator and the audience respond to, or are willing to facilitate, each other's communication needs. They offer their own five dimensions of interactivity:

(1) playfulness;

(2) choice;

(3) connectedness;

(4) information collection; and

(5) reciprocal communication.

Sometimes only one is desired by the audience or offered by the communicator. Sometimes two, three, or all five are. Whatever the combination, Ha and James feel that these dimensions make up interactivity. They go on to operationalize these dimensions into various tools and offerings on the World Wide Web, then content analyze several business Web sites to measure their degree of interactivity.

The second study to tackle the concept of interactivity, by Sanjoy Ghose and Wenyu Dou, was published in Spring 1998. Ghose and Dou similarly review some recent literature on interactivity, although falling short of providing a

definition of their own as Ha and James did. But whereas Ha and James offer a macro vision of interactivity on the Web through their five dimensions, Ghose and Dou approach it on a micro level, getting much more specific by identifying 23 different forms of interactive functions that can be found on Web sites. They are:

(1) on-line forms for customer feedback;

(2) on-line forms for inquiries;

(3) on-line forms for comments;

(4) downloading of software;

(5) on-line problem diagnostics;

(6) order status checking;

(7) site survey;

(8) product survey;

(9) new product proposal;

(10) keyword search;

(11) personal choice helper;

(12) virtual reality presentation;

(13) dealer locator;

(14) electronic coupon;

(15) on-line ordering of goods;

(16) on-line contests with prizes;

(17) push media;

(18) interactive job placement;

(19) electronic postcard;

(20) surfer postings;

(21) user groups;

(22) games; and

(23) multimedia presentations.

Using these functions, the authors then content analyzed several Web sites, half of which were on "Lycos' Top 5%" list. The authors found that the higher the interactivity (defined by the 23 functions listed above), the better the site (defined as presence on Lycos' "best of" list).

Interactivity and Public Relations

As noted, this concept of interactivity explored in the above studies is closely related to public relations. Examine the similarities between these two definitions:

> **Interactivity** is the extent to which the communicator and the audience respond to, or are willing to facilitate, each other's communication needs (Ha and James, 1998).
>
> **Public relations** is the management function that establishes and maintains mutually beneficial relationships between an organization and the publics on whom its success or failure depends (Cutlip et al., 1994).

The ability, and wisdom, of summing up public relations into a simple definition is often questioned. However, this definition from a introductory public relations textbook helps illustrate the common goals of these two concepts and illustrates a prime opportunity for studying public relations on the World Wide Web through concentrating on interactivity and the four models of public relations.

Returning to the earlier review of the public relations models, one can begin to see how the latter two models, the two-way symmetrical and two-way asymmetrical models, are closely related to interactivity in its fullest form. In fact, one could imagine a kind of interactivity scale running along the bottom of Grunig and Hunt's (1984) table describing the four models of public relations (see Table 1), in which interactivity begins at, say, zero at the far left next to the press agent/publicity model, and slowly increases to, say, 100, on the far right side of the two-way symmetrical model. Figure 1 is a representation of this proposed relationship as a line graph.

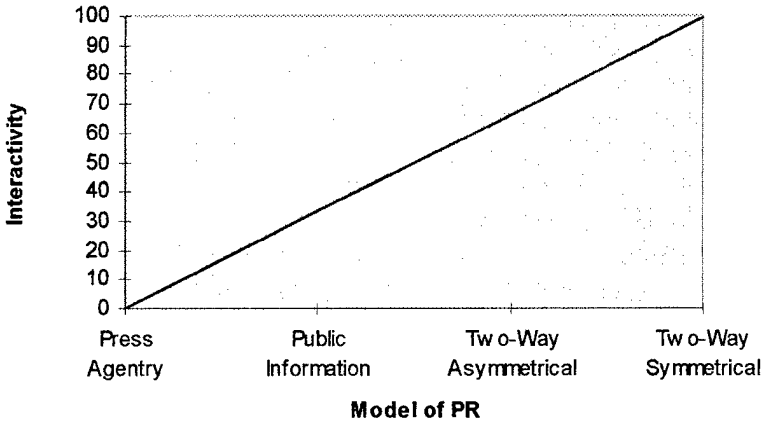
The press agentry and publicity model would have the lowest interactivity, because it is one-way and essentially propaganda in which the truth, and arguably the wishes of the receiver, are not important. Public information, while still low on this proposed interactivity scale due to its similar one-way nature, is slightly better since the "communication needs" of the receiver are deemed important

enough to warrant the dissemination of truthful information and since slightly better research (or information collection) is utilized.

With the two-way asymmetrical model, there would be a marked increase in interactivity, as the communication is two-way, research is used extensively, and feedback is important. Finally, two-way symmetrical goes still one step further, wherein the goals of the sender (or company) are not all-important, and the relationship is truly beneficial to both parties.

Figure 1

Proposed Relationship Between Interactivity and the Four Models of Public Relations



Chapter 3: Summary and Research Question

This idea that the models of public relations and interactivity are parallel concepts warrants further investigation. This investigation could take one of two possible paths.

The first is in relation to J. Grunig and L. Grunig's (1989) conclusion that technology is an inconsistent explanatory variable for public relations behavior. In other words, technology itself will not dictate or alter the model of public relations used by an organization. In relation to the Internet, this would mean that organizations that use a public information model of public relations would, in turn, use that same model on the World Wide Web. One would expect, for example, to see straightforward postings of news releases, speeches, and other information without the spin found in press agentry, the research found in two-way asymmetrical public relations, or the reciprocal communication of two-way symmetrical public relations. In other words, a very low level of interactivity would be expected.

However, another path that this investigation could take would be in relation to another conclusion made by J. Grunig and L. Grunig (1989). They said that the public relations "models function as situational strategies for dealing with different publics and different public relations problems. A single

organization, therefore, employs different models as the situation changes." This would seem to indicate quite the opposite of the previous example.

If the agreed-upon major benefit of the World Wide Web is its interactivity, and if J. Grunig and L. Grunig's (1989) observations and conclusions are correct, then one would see highly interactive World Wide Web sites regardless of the dominant model of public relations used by an organization. It would follow that organizations that use, for example, press agentry or public information models as their dominant form of public relations would implement two-way asymmetrical and symmetrical public relations on their web sites. Why? Because the "public relations problem" and the "publics" involved call for the high level of interactivity that these two models represent.

These two paths will be examined in this study by using methods already demonstrated and data already collected by previous works. A starting point for this study is the E. Pollack (1984) thesis concerning public relations activities in federal government agencies. The data collected by E. Pollack (as seen in Table 3) provides a benchmark from which to further examine the effect the World Wide Web has on the model of public relations used, delineating the model of public relations used most by each organization's practitioners.

While it could be argued that these numbers are outdated (the data were collected in 1984), a case can be made that the mean scores are still valid today.

Federal government agencies continue to operate under strict laws that forbid them from utilizing all the tools in the public relations toolbox, limiting them to mostly public information models of public relations. Additionally, federal government agencies are very insular, where any turnover in personnel usually results in somebody from another government agency coming in. In other words, due to hiring practices, the same people move from job to job within the government. Any new people hired learn from the established personnel, so the same public relations practices continue.

With E. Pollack's data in hand, the next step is to content analyze the World Wide Web sites of the federal agencies she examined, using the methodology and ideas about interactivity used by previous researchers (Ghose and Dou, 1998; Ha and James, 1998). The results of this content analysis can be compared to the data collected by E. Pollack on models of public relations, and some insight into the following research question can be gained:

> What relationship exists between the model of public relations used by a federal government agency and the level of interactivity of its World Wide Web site?

Chapter Four: Method

To seek answers to this study's research question, a content analysis was conducted based on Ha and James' (1998) method. Although their study was conducted just a year ago, some changes to their method were required to account for new trends in Web interactivity. Additionally, some changes were made that this author felt were errors or limitations with the original content analysis design.

Ha and James' (1998) five dimensions of interactivity were used in this study, with various World Wide Web devices and features representing each. Sometimes the presence, and other times the total number of such devices, were coded.

The **playfulness** of a Web site was measured using two different variables: arousal devices and games. Arousal devices were defined as unordinary items on a web page that attract attention and invite participation. Examples included animation, Shockwave or Java items, special pull down screens, and changing colors. Static pictures and graphics were not included as such devices are now commonplace. The total number of arousal devices were counted and coded. Games, the second playfulness variable, were defined as any device that required the user to provide input that changes the direction of a scenario. Examples included obvious ones, like tic-tac-toe, and less obvious ones, like virtual crises. The total number of games were counted and coded.

The **choice** dimension of interactivity was measured using nine variables: language, browser, speed, color, frames, text, customize, downloadable software, and navigational aids. The first six were coded when a clear choice was presented, i.e. a choice of Spanish or English for language; Microsoft Internet Explorer or Netscape Communicator for browser; 28.8 kbps or 56 kbps for speed; maroon or orange for color; frames or non-frames version for frames; and text-only or graphics version for text. The customize variable was defined as the ability of the user to customize the information presented to them on the Web site's home page. Only the presence or non-presence of these seven variables was coded.

Downloadable software was the presentation of a choice of software, that included both promotional items like screensavers and utilitarian items like Real Player or Adobe Acrobat that aided the visitor in using the Web site. Finally, navigation aids were defined as any mechanism or feature designed to aid the user in navigating the Web site. Examples included site maps, search engines, and pull-down screens. The total number of these last two variables was coded.

Connectedness was measured using four variables: self-related hyperlinks, third party-related hyperlinks, hyperlinks to the same site, and hyperlinks to different sites. A self-related hyperlink was defined as one that links to information specific to the Web site owner, their services, and/or their

products. These would include a link to a history of the Department of Commerce, a link to news releases, or a link to a subordinate agency's home page. A third party-related hyperlink was defined as one that links to information specific to a third party, its services, or its products. A third party is any entity that does not directly fall under the Web site owner's control. An example would be a link to the U.S. Air Force's Patrick Air Force Base Web site on NASA's home page. Although the two are related (Patrick Air Force Base is the home of most of the personnel who launch NASA's rockets, but the base is owned by the Air Force, not NASA), the base is a third party and the link should be counted as a third party-related hyperlink. The total number of hyperlinks for these two variables were counted and coded.

Same-site hyperlinks were defined as any link to a page on the same domain. Vice versa, different-site hyperlinks were defined as any link to a page on a different domain. So a hyperlink to http://www.doc.gov/comm.html/ on the http://www.doc.gov/ site was coded as a same-site hyperlink, whereas a link to http://www.whitehouse.gov/ on the http://www.doc.gov/ home page was coded as a different-site hyperlink. Again, the total number of hyperlinks for these two variables were counted and coded.

The **information collection** dimension of interactivity was measured using the following variables: registration, counters, and cookies. Registration

was defined as the requirement of the user to fill out a personal profile form in order to access the Web site or to access special areas of the Web site. Counters were defined as small, usually graphical, counters that keep a visual record of the number of visitors to a site. Cookies were defined as the small file placed on a user's computer by a Web site to track that visitor's usage patterns. The presence of these information collection variables was coded.

The last dimension of interactivity, **reciprocal communication**, was measured using six variables: e-mail address, phone number, regular mail address, survey, chat room, and fill-in question form (similar to e-mail, in which users can send a question to the Web site owner by filling in fields on their Web browser with their question and return e-mail address, through which they will later receive an answer). The presence of these six variables was coded.

Sample and Procedures

The sample used was based on E. Pollack's (1984) survey of federal agencies. The sample for her study was drawn from the *Federal Yellow Pages* and the *Directory of Public Information Contacts: Washington, D.C., 1983*. A purposive sample of 500 practitioners was chosen for her study, from a potential 856 (nearly 60 percent of the population). Individuals were mostly management level, with less than one-third being communication technicians.

Questionnaires were mailed by E. Pollack to the public affairs practitioners. Of the 500 originally chosen for the study, 310 responded; 80 were eliminated because their jobs did not fit the criteria for the study. Thus, the response rate was 73.8 percent. This included representatives from 22 federal government departments and 166 agencies within those departments.

The seven-page questionnaire contained 47 close-ended questions. The questions measured the participants' perception of public relations, the agencies' public relations activities, structural variables, environmental variables, and the formal education, training, and roles of the staff members in public relations. From the responses to this questionnaire, mean scores were produced for the four models for each agency (see Table 3).

Of the 22 federal government agencies surveyed by E. Pollack, only the following were used for this study:

(1) the White House;

(2) Department of State;

(3) Department of the Treasury;

(4) Department of Commerce;

(5) Department of Health and Human Services;

(6) Department of Justice;

(7) Department of Housing and Urban Development;

(8) Department of Labor;

(9) Department of the Interior;

(10) Department of Education;

(11) Department of Agriculture;

(12) Department of Transportation;

(13) Department of Energy;

(14) Department of Defense;

(15) Department of the Army;

(16) Department of the Navy;

(17) Department of the Air Force;

(18) National Aeronautical and Space Administration; and

(19) the Judicial Branch.

The independent federal agencies and the legislative branch were not used because the mean scores for each entity surveyed were not readily available; only aggregate numbers were available. The Delegation of the Commission of the European Communities was not used because it no longer exists as it was known in 1984.

The Web site addresses for these 19 agencies were found using the Yahoo directory. Although E. Pollack (1984) surveyed various offices under each federal agency, only the main Web site was used for this study. The Web site

http://www.uscourts.gov/ was used for the judicial branch. The content analysis was conducted on October 31, 1999. One site, the Department of Interior's home page, was unavailable on this date because it was being updated. The page was content analyzed on November 1, 1999, instead. Macintosh computers running Netscape Communicator were used to access the Web sites. The computers had fast connections providing very brief access times. The browsers were configured to ask the user whether to accept any incoming cookies so that their presence could be noted. Frequent breaks were taken to relieve any boredom or fatigue.

In general, the unit of analysis was the home page, or first page on the Web site. This was done both for reliability, as different Web sites can have widely different numbers of pages and layers, and to save time. However, after several trial runs, it was found that certain exceptions allowing the coding of variables found on second-layer Web pages were necessary.

For example, many Web sites would have a link on the main page entitled "Contact Us" or something similar. On this second page would be found an e-mail address, a phone number, and a regular mailing address. If only the first home page was used as the unit of analysis, the web page would have been coded as having no e-mail address, no phone number and no regular mailing address. But because there was a direct and obvious link to these contact devices, an exception was made for this variable allowing them to be coded due to presence

on a second-layer page. This rule (to go to a second-layer page through a direct and obvious link) was used with the following variables: games, downloadable software, navigation aids, registration; e-mail; phone number; survey; chat rooms; fill-in question form; and regular mailing address.

Three coders (the author, one graduate student, and one undergraduate student) were trained over a week-long period. Although the sample was small, three coders were used because the quality of data could be affected by fatigue, boredom, and the sheer number of items being counted and coded. This allowed for each coder to only have to code six (or in one case seven) Web sites. A pre-test was conducted a week before the actual test. Ten randomly selected state government sites were content analyzed be all three coders. The overall observed agreement for the pre-test was 0.92, with a Scott's pi value of 0.81. The agreements were deemed high enough to warrant proceeding with the content analysis after problem areas were identified and remedied through discussion.

Chapter Five: Results

All 19 Web sites were successfully accessed, with the exception of the Department of Interior's site as noted above. Generally, the sites had very similar results in each dimension of interactivity and each variable, although there were some notable exceptions. A table of all results can be seen in Table 4.

In order to better compare the results between sites, various interactivity scores were devised. The first, rather crude, score was arrived at by simply adding the results of each variable. The second is a score of zero to five. Presence of any of the variables in each interactivity dimension were counted to arrive at this number. A third interactivity score was devised based on presence of each variable, giving a score of zero to 26. Finally, interactivity scores for each dimension were devised based on presence of each variable. Therefore, the interactivity score for playfulness, for example, would be from zero to two, because there are only two variables in this dimension (arousal devices and games). Table 4 also contains the mean scores for each model of public relations found by E. Pollack (1984) for each of the federal agencies being examined.

Playfulness

The web sites were generally not very playful, with a mean interactivity score in this dimension of 0.63 out of a maximum of two (2). No games were

Table 4

Results of Federal Agency World Wide Web Site Content Analysis

	WH	State	Treas	Com	HHS	Justic	HUD	Labor	Interi	Educ	Agric	Trans	Energ	DoD	Army	Navy	AF	Space	Judic	Mean
AROUSAL	1	0	0	2	2	1	3	0	0	0	1	1	1	2	1	1	1	0	0	0.89
GAMES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
LANG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
BROWSR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
SPEED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
COLOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
CUSTOM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
SOFTWA	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0	1	0	0	2	0.32
NAVAIDS	1	2	2	1	1	2	4	2	4	2	4	1	2	3	4	1	1	2	1	2.11
TEXT	0	1	1	0	1	1	0	1	1	1	0	0	0	0	0	0	0	1	0	0.42
FRAMES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
CHOICE	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0.11
OTHER SELF LINK	19	18	20	50	14	11	30	35	18	53	21	27	18	58	42	18	13	37	8	26.84
3RD LINK	0	1	0	1	0	0	1	1	0	0	0	2	1	1	2	0	0	1	1	0.63
SAME LINK	18	20	22	37	12	14	32	35	21	53	19	20	19	45	31	17	12	41	11	25.21
DIFF LINK	2	3	0	17	4	0	1	3	4	0	4	8	2	19	18	1	1	1	0	4.63
REG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
COUNT	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.05

	WH	State	Treas	Com	HHS	Justic	HUD	Labor	Interi	Educ	Agric	Trans	Energ	DoD	Army	Navy	AF	Space	Judic	Mean
COOKIES	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	1	1	0	0	0.32
E-MAIL	0	1	1	1	0	1	1	1	1	1	1	1	1	0	1	0	1	1	0	0.74
PHONE	1	1	0	1	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0.32
SURVEY	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0.11
CHAT	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0.05
FORM	1	1	0	0	1	0	0	0	1	1	0	0	0	1	0	0	1	0	1	0.42
MAIL	1	1	0	0	0	1	1	0	1	1	0	0	1	0	0	0	0	0	1	0.42
OTHER RECIPR	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0.05
TOTALS	44	49	46	111	35	31	76	78	52	115	50	61	47	133	100	40	32	84	25	63.63
INTER: 0-5	4	3	3	5	4	4	4	3	3	4	4	5	5	5	4	4	5	3	3	3.95
INTER: 0-26	8	10	5	9	7	7	11	7	9	10	6	8	10	10	8	7	9	7	7	8.16
INTER: PLAY	1	0	0	1	1	1	1	0	0	0	1	1	1	1	1	1	1	0	0	0.63
INTER: CHOICE	1	2	2	1	2	2	2	2	2	2	1	1	1	3	1	2	2	2	2	1.74
INTER: CONNEC	3	4	2	4	3	2	4	4	3	2	3	4	4	4	4	3	3	4	3	3.32
INTER: COLLECT	0	0	0	1	0	0	0	0	0	1	0	1	1	1	0	1	1	0	0	0.37
INTER: RECIPR	3	4	1	2	1	2	4	1	4	5	1	3	3	1	2	0	2	1	2	2.21
PRAGENT	3.25	2.71	3.13	3.29	3.01	2.86	3.94	2.98	3.27	2.46	2.93	2.86	2.54	2.93	2.81	3.02	3.11	2.69	3.13	
PUBINFO	3	2.77	2.92	3.22	3.08	3.11	2.88	3.31	3.35	2.46	3.3	3.22	3	3.3	2.74	2.84	2.8	3.08	3.13	
ASYMM	2.44	2.82	2.68	2.35	2.71	2.8	3.31	2.33	2.96	2.25	2.72	2.58	2.21	2.72	2.86	2.69	2.88	2.3	2.13	
SYMM	2.06	2.89	2.52	2.77	2.24	3	2.69	2.49	2.68	2.5	2.96	2.78	2.54	2.96	3.15	2.61	2.78	2.69	2.38	

found on the 19 Web sites, and only 63 percent of the sites had some kind of curiosity-arousal device. The mean number of arousal devices was 0.89.

Choice

The mean interactivity score for the dimension of choice was 1.74 out of a maximum of 10. No sites offered choices of language, browser, speed, color, customization, or frames. Of the sites studied, 21 percent offered downloadable software, 42 percent offered text-only versions of their site, and all offered some kind of navigational aid. Two sites, or 10 percent, offered a choice categorized by the coder as "other." These included an audio version of news and a mirror site (the same site on a different server offered to lessen congestion).

Connectedness

The Web sites analyzed scored very high in connectedness in some ways and low in others. The mean interactivity score for this dimension was very high at 3.32 out of a maximum of four (4). However, most links were about the owner of the Web site and to its own domain. While all sites had self-related and same-site hyperlinks, 53 percent had third party-related hyperlinks and 79 percent had different-site hyperlinks. The disparity is better seen when looking at the total

number of links. The mean for the total number of self-related hyperlinks was 26.84; third party-related hyperlinks was 0.63; same-site hyperlinks was 25.21; and third party-related hyperlinks was 0.63.

Information Collection

The federal agency Web sites did very little information collection. The overall interactivity score mean for this dimension was 0.37 out of a maximum of three (3). None of the sites had a registration function, only one (0.05) had a counter, and six (32 percent) attempted to send a cookie to the coder's computer.

Reciprocal Communication

Reciprocal communication was fairly low in terms of the interactivity score, with a mean of 2.21 out of seven (7). This may not be a fair measure of the reciprocal communication of these Web sites. All but one (95 percent) had at least one type of reciprocal communication device; 74 percent had e-mail addresses; 32 percent had phone numbers; 42 percent had regular mailing addresses; 11 percent had surveys; one (5 percent) had a chat room; 42 percent had fill-in question forms; and one (5 percent) had a reciprocal communication device coded as an "other," specifically a mechanism that allowed the user to vote for a poster they like the most.

Statistical Analysis

One of the first steps in analyzing the data was to look at the numbers graphically. Column charts, as seen in Figures 2-7, were made to get a visual representation of any relationship between the models of public relations and the interactivity of the web sites. Looking at the graphs, there does not appear to be much of a relationship between the variables.

Next Pearson correlation tests were run to verify what was seen in the charts. The tests were run using the four mean scores on the models of public relations for each agency offered by E. Pollack (1984) and the raw numbers gathered by the coders in this study, as well as the various interactivity measures mentioned previously. The results are presented in Table 5. Neither the 0-5 interactivity score nor the 0-26 interactivity score showed any significant correlations at the 95 percent confidence interval level. This was also true when checking the totals and the various interactivity measures for each dimension of interactivity.

In fact, the only statistically significant correlations found were between arousal devices and the press agentry model ($r = 0.5311$, $p = 0.019$); navigational aids and the two-way asymmetrical model ($r = 0.541$, $p = 0.017$); navigational aids and the two-way symmetrical model ($r= 0.5257$, $p = 0.021$); different-site

hyperlinks and the two-way symmetrical model ($r = 0.4916$, $p = 0.033$); e-mail and the two-way symmetrical model ($r = 0.491$, $p = 0.033$); phone number and the press agentry model ($r = 0.7005$, $p = 0.001$); phone number and the two-way asymmetrical model ($r = 0.5512$, $p = 0.014$); survey and the public information model ($r = -0.6313$, $p = 0.004$); chat rooms and the press agentry model ($r = 0.7005$, $p = 0.001$); chat rooms and the two-way asymmetrical model ($r = 0.5512$, $p = 0.014$); and other reciprocal communication and press agentry ($r = 0.7005$, $p = 0.001$). Arousal devices and the two-way asymmetrical model ($r = 0.4521$, $p = 0.052$) was marginally significant.

Pearson correlations were also run for a new variable titled "model." Model was a number between one and four, with one representing the press agentry model of public relations, two representing the public information model of public relations, three representing the two-way asymmetrical model of public relations, and four representing the two-way symmetrical model of public relations. Each federal agency was given the number that corresponded to the model of public relations that received the highest mean score in E. Pollack's (1984) study. Only one statistically significant correlation was found, that between model and surveys ($r=0.6069$, $p=0.006$).

Finally, after examining the results of the Pearson's correlations, one-way analysis of variance tests were run on the various interactivity measures and the

Figure 2

Overall Interactivity Scores and Models of Public Relations

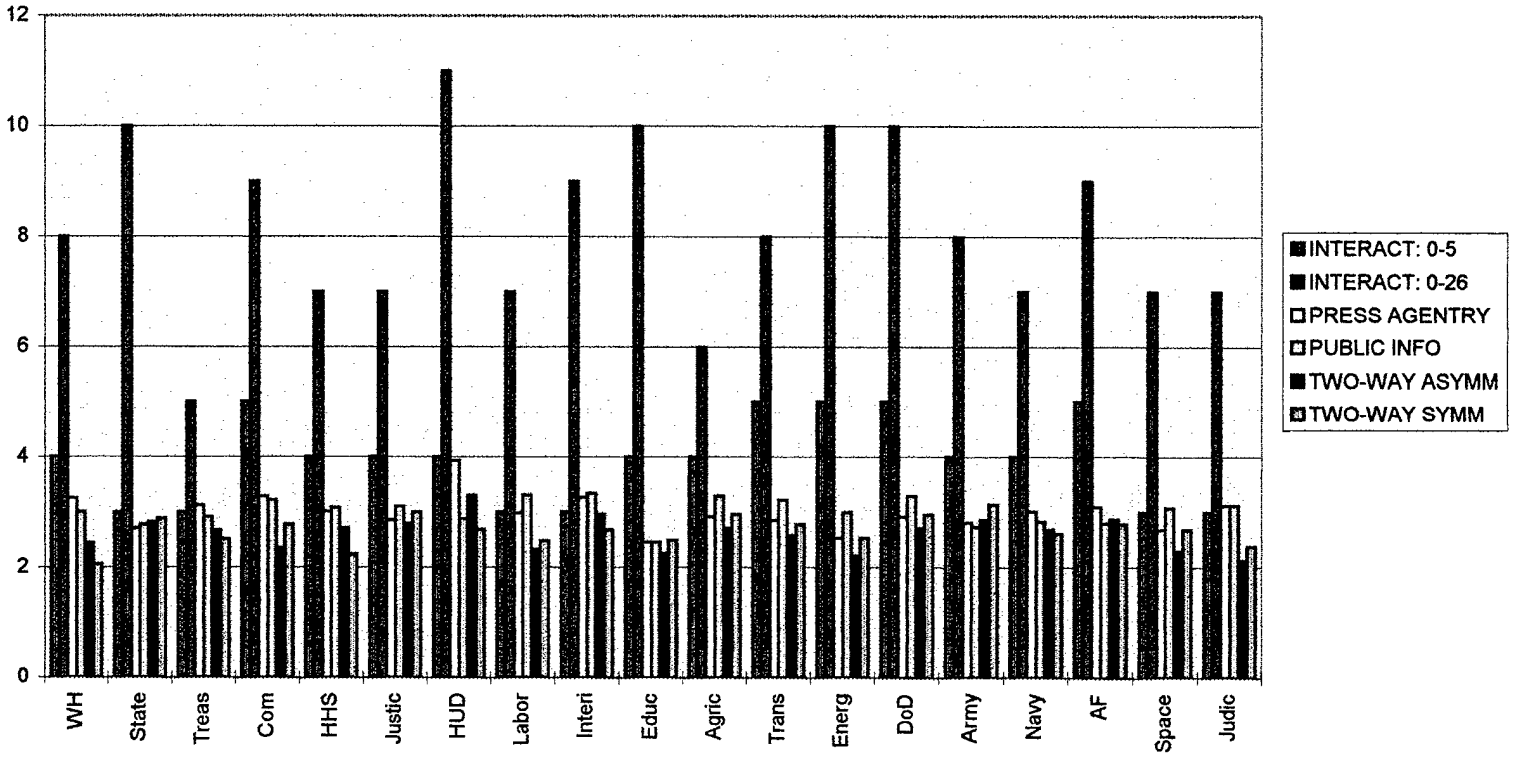


Figure 3

Playfulness Interactivity Scores and Models of Public Relations

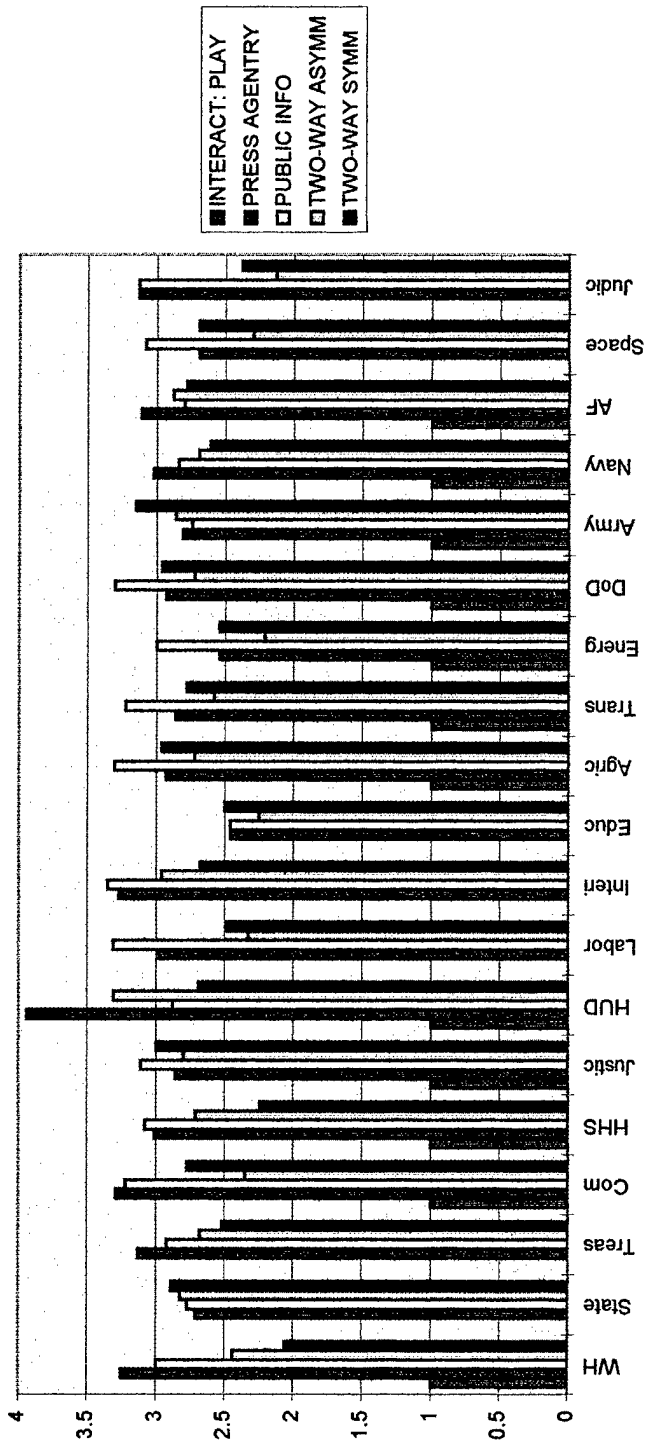


Figure 4

Choice Interactivity Scores and Models of Public Relations

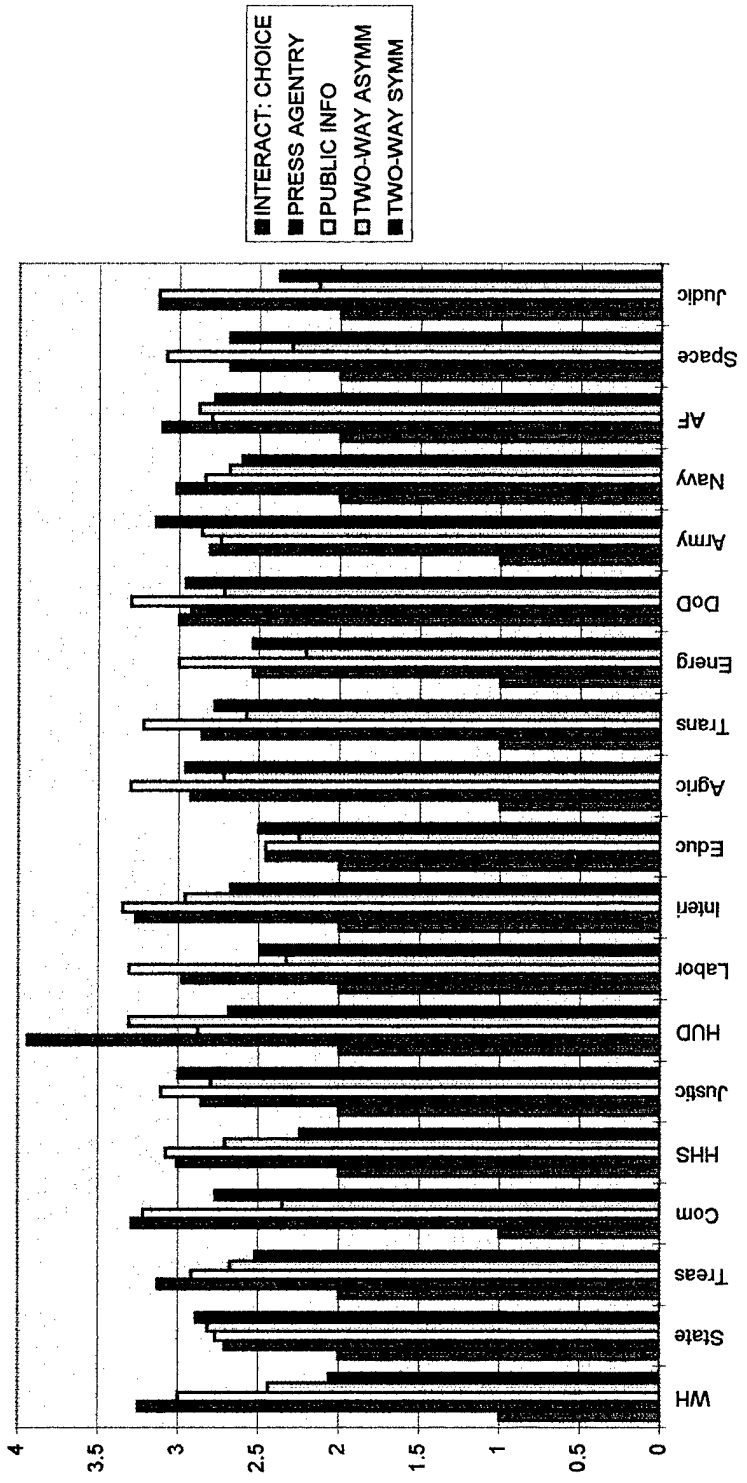


Figure 5

Connectedness Interactivity Scores and Models of Public Relations

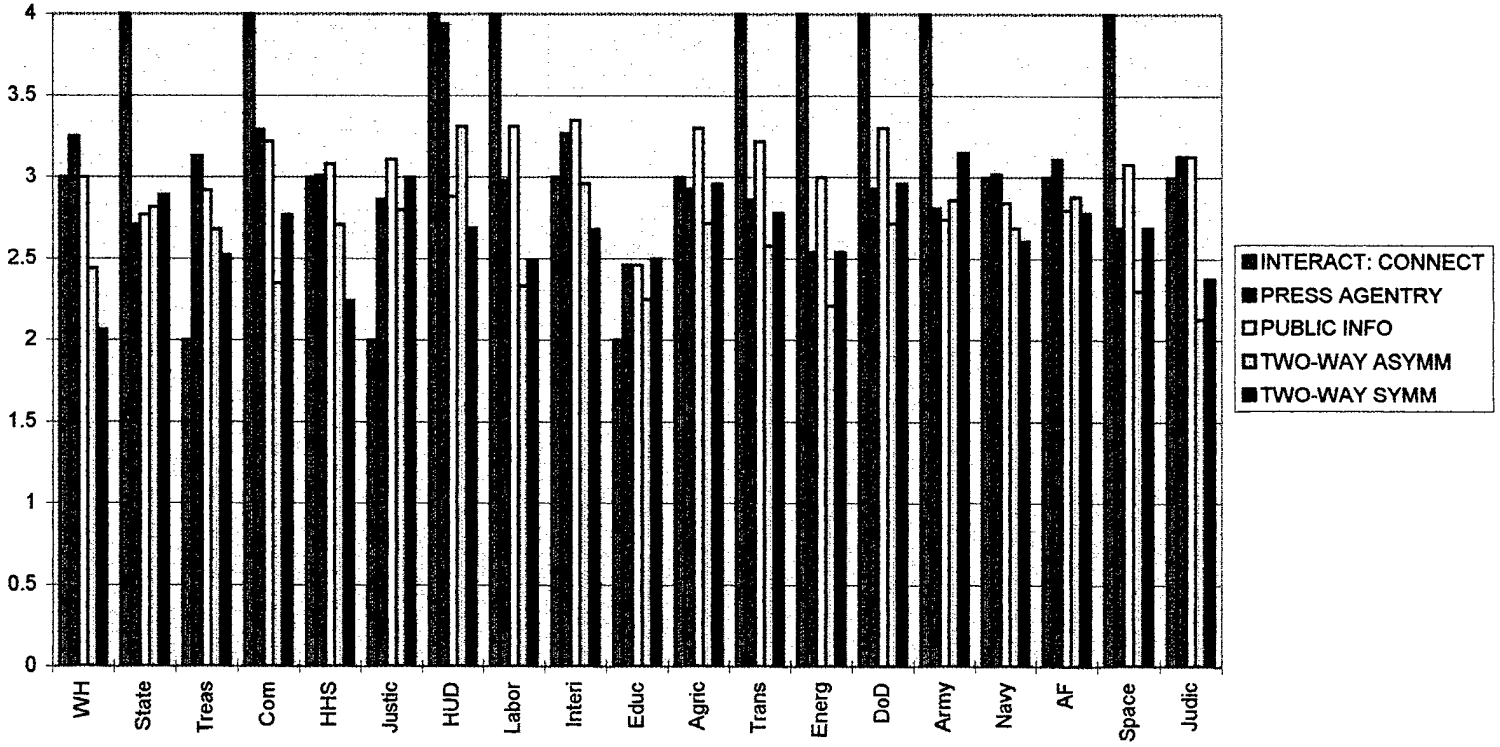


Figure 6

Information Collection Interactivity Scores and Models of Public Relations

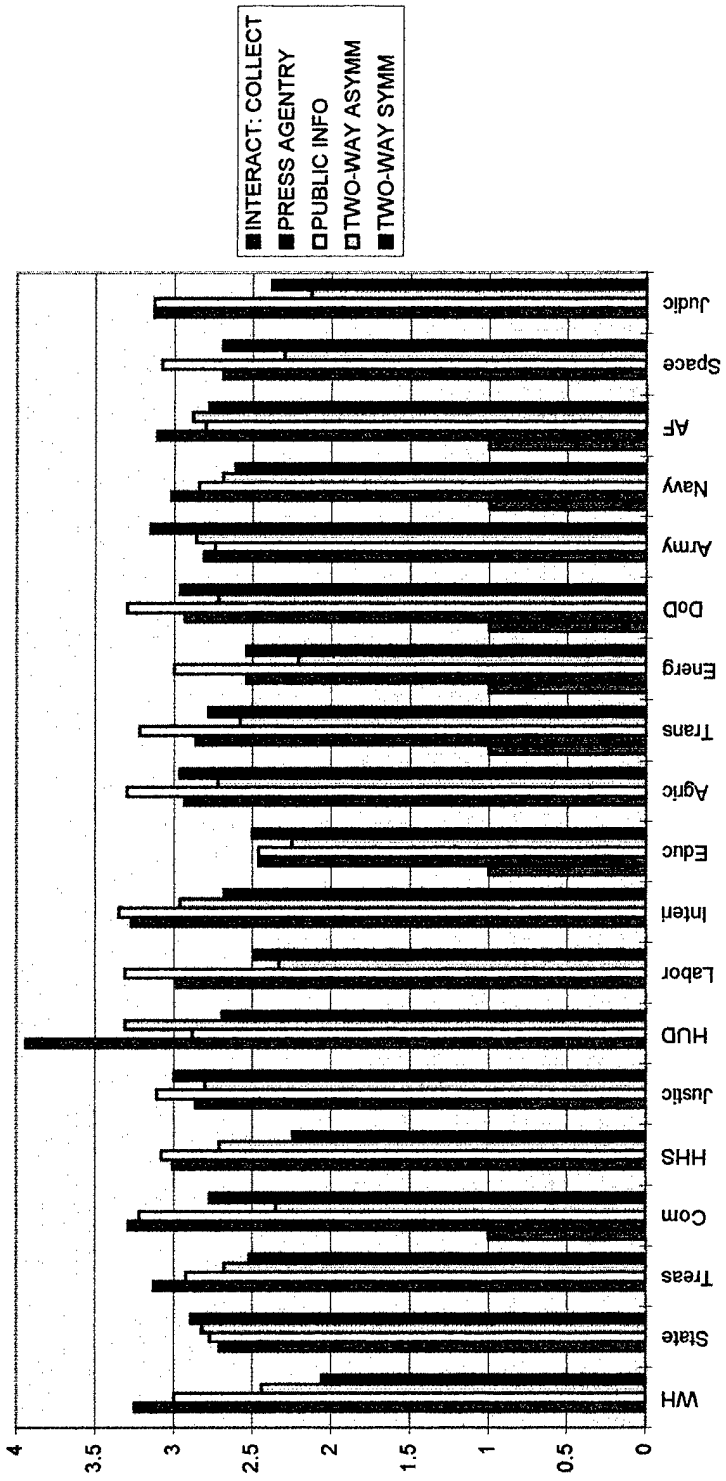


Figure 7

Reciprocal Communication Interactivity Scores and Models of Public Relations

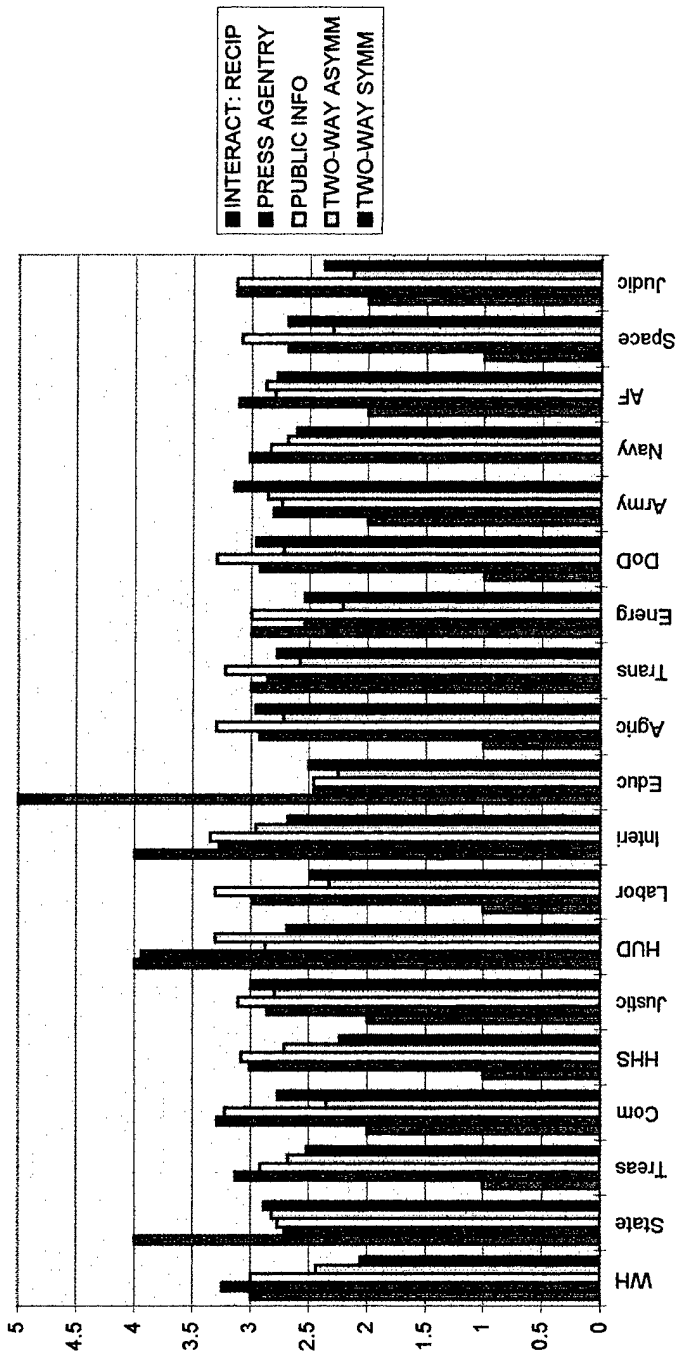


Table 5

Pearson Correlation (r) Tests on Content Analysis Results and Models of Public Relations

	Model	sig	PrAgent	sig	PubInfo	sig	Asymm	sig	Symm	sig
Inter0-5	-0.1874	0.442	-0.0402	0.870	0.002	0.993	0.0323	0.896	0.2217	0.362
Inter0-26	0.0843	0.731	0.0892	0.717	-0.2785	0.248	0.2075	0.394	0.1505	0.539
Totals	0.2464	0.309	-0.1274	0.603	-0.0499	0.839	-0.097	0.693	0.3292	0.169
InPlay	-0.2306	0.352	0.2062	0.397	0.079	0.748	0.3153	0.189	0.2161	0.374
InChoice	-0.1324	0.589	0.0693	0.778	-0.019	0.938	0.2112	0.386	0.0143	0.954
InConn	0.0248	0.920	0.0739	0.764	0.2704	0.263	0.0104	0.966	0.2583	0.294
InColl	-0.177	0.469	-0.2612	0.280	-0.1637	0.503	-0.2379	0.327	0.1089	0.657
InRecip	0.282	0.242	0.0222	0.928	-0.374	0.115	0.1142	0.642	-0.0528	0.830
Arousal	-0.334	0.162	0.5311	0.019	0.1049	0.669	0.4521	0.052	0.1248	0.611
Games	0	0	0	0	0	0	0	0	0	0
Language	0	0	0	0	0	0	0	0	0	0
Browser	0	0	0	0	0	0	0	0	0	0
Speed	0	0	0	0	0	0	0	0	0	0
Color	0	0	0	0	0	0	0	0	0	0
Custom	0	0	0	0	0	0	0	0	0	0
Software	-0.198	0.416	0.2803	0.245	0.1456	0.552	-0.002	0.993	-0.0083	0.973
NavAids	0.43	0.066	0.173	0.479	0.1007	0.682	0.541	0.017	0.5257	0.021
Text	0.2148	0.377	-0.2873	0.233	-0.0619	0.801	-0.0336	0.892	-0.1339	0.585
Frames	0	0	0	0	0	0	0	0	0	0
ChoicOth	-0.1939	0.426	0.0261	0.915	0.0342	0.889	0.211	0.386	0.2614	0.280
Self	0.2174	0.371	-0.1419	0.542	-0.0613	0.803	-0.151	0.537	0.2865	0.234
Third	0.202	0.407	-0.0994	0.686	0.0981	0.689	-0.0974	0.692	0.3742	0.114
Same	0.2381	0.326	-0.1761	0.471	-0.1472	0.548	-0.1914	0.432	0.1825	0.455
Diff	0.1508	0.538	-0.0087	0.972	0.2571	0.288	0.0834	0.734	0.4916	0.033
Reg	0	0	0	0	0	0	0	0	0	0
Count	-0.2433	0.316	0.2183	0.369	0.1963	0.421	-0.2133	0.380	0.0907	0.712
Cookies	-0.0668	0.786	-0.3759	0.113	-0.2641	0.274	-0.1444	0.555	0.0694	0.778
E-Mail	0.282	0242	-0.1358	0.579	-0.1112	0.650	0.1613	0.509	0.491	0.033
Phone	0.1447	0.555	0.7005	0.001	-0.1492	0.542	0.5512	0.014	0.0196	0.936
Survey	0.6069	0.006	-0.3895	0.099	-0.6313	0.004	-0.0729	0.767	0.2032	0.404
Chat	-0.2433	0.316	0.7005	0.001	-0.1492	0.542	0.5512	0.014	0.0196	0.936
Form	0.1153	0.638	-0.0323	0.896	-0.1493	0.542	-0.0119	0.961	-0.3429	0.151
Mail	0.1153	0.638	0.065	0.792	-0.2366	0.329	-0.0083	0.973	-0.2424	0.317
RecOther	-0.2433	0.316	0.7005	0.001	-0.1492	0.542	0.5512	0.014	0.0196	0.936

model variable. As seen in Table 6, none of the interactivity measures varied significantly between the various models of public relations.

Table 6

One Way Analysis of Variance of the Interactivity Scores by Model

	F Ratio	F Probability
Interactivity: 0-5	0.3489	0.7905
Interactivity: 0-26	1.0529	0.3982
Total	0.7684	0.5294
Interactivity: Choice	0.7610	0.5333
Interactivity: Collection	0.3915	0.7609
Interactivity: Connectedness	0.4722	0.7062
Interactivity: Playfulness	1.8367	0.1838
Interactivity: Reciprocal	2.7472	0.0795

Chapter Six: Discussion

Looking at the level of interactivity of these federal agency World Wide Web sites, the results are mixed. Using the interactivity score ranging from zero to five, the same that Ha and James (1998) used in their study, all sites looked at were highly interactive. All scored at least a "3," with most (72 percent) scoring a four or more. Perhaps, then, this measure is not precise enough for the level of interactivity of today's Web sites. It is possible that at the time of the Ha and James study, although only about two years ago, such a measure would have been precise enough. But in the world of the Internet, where the envelope's edge is being pushed at ever increasing speed, what could be considered highly interactive two years ago might find itself at the bottom end of interactivity spectrum today.

Using the less broad-stroked, more precise zero through 26 interactivity measure, we see that none are over the halfway mark of 13. The mean, as mentioned, is 8.16. Seemingly low, but not when you consider the fact that several variables – in fact eight of them – had no occurrences in the Web sites analyzed. While it could be argued that this simply means that the federal agencies were not being interactive enough, the more likely reason is that some of those variables are outdated. Choices such as language, browser, speed, and color

were prevalent in the early stages of Web development but are out of vogue and perhaps unappealing to users today.

The other variables non-existent in Web sites were games, customize, frames, and registration. Unlike the other unseen variables, these are still valid devices promoting interactivity. Games may seem out of place on a government Web site, but instructional games could have a place on these kinds of home pages. A customization feature is something that would require a lot of content, and a lot of time on the part of the Web site development team. But sites such as the Department of Commerce's home page had voluminous amounts of information (one could argue it had *too much* information) that would have benefited greatly from a customization feature allowing users to see only the information that suits their needs. A frames/non-frames choice is only needed when there is a frames version of the Web site. None of the sites analyzed employed frames, so it could be assumed this is due to a federal policy banning use of frames in their Web sites. Finally, registration is used throughout the World Wide Web as a relatively painless way of collecting information about those visiting a site. While it may seem to fetter access, it can be non-intrusive by requiring limited information and through easy-to-use graphic interfaces.

So if the variables deemed "old fashioned" are removed, we see the mean score of 8.16 out of 22, a slightly more respectable showing. This showing can be

improved even more if one were to make other alterations. For example, it may seem redundant to have both an e-mail address and a fill-in question form on a Web site. But if one is missing, then that Web site's interactivity score drops by one if it is computed in the strictest fashion.

In the end, there may be no perfect way of scoring a Web site's interactivity. Using the above methodology to content analyze a much larger sample of Web sites is probably needed before we can be certain that a "3" or a "10" in interactivity is high, low, or average. But it's safe to say that in the sample looked at in this study, interactivity was generally high, with most of the interactive features available to a Web site being used. Excluding the outdated variables, only games, customization, frames choice, and registration went unused, and the reasons for their exclusion, as cited earlier, are understandable.

So what is the relationship between this interactivity and the model of public relations used by the Web site owner? From the looks of the statistical analyses, there isn't much of one at all. There were no significant correlations between any of the interactivity measures and the model of public relations mean scores. The two-way analysis of variance shows us that all the interactivity measures varied very little from model to model. One has to look deeper, beyond the devised interactivity scores and into the raw variable results before any statistically significant correlations are seen. But because these correlations show

up in a scattered fashion with no regularity, they seem due more to a small sample rather than a true relationship.

So why was there no relationship? Going to back to the summary of the review of literature, two possible outcomes to the research question were discussed. One was that there would be a strong relationship between the public relations model an organization uses and the interactivity of its Web site. Recall that J. Grunig and L. Grunig (1989) concluded that technology is an inconsistent explanatory variable for public relations behavior, and that technology itself will not dictate or alter the model of public relations used by an organization.

The other possible outcome was predicted based on another idea by J. Grunig and L. Grunig (1989) that "organizations do and should use different models strategically to deal with different public relations problems and different sources of conflict in their environments." And that seems to be what has happened here.

The analysis of variance tests have shown that the interactivity of the Web sites is basically the same regardless of the dominant model of public relations. And although questionable, it can be safely said that the interactivity level of these Web sites is high. In other words, these federal agencies are practicing two-way symmetrical and two-way asymmetrical public relations on their Web sites while practicing any of the four models in the office.

Perhaps one sees this because the World Wide Web, by its very nature, is interactive. The Internet was created in the early 1980s by scientists to exchange information (Holtz, 1999). So even in the very beginning, the Internet and, by the end of the decade, the World Wide Web were created for two-way communication. Public relations, on the other hand, has its roots in one-way communication, that of the press agent and publicist. While two-way models of public relations would come later, the entire profession seems constantly fighting to break free of its one-way history. Looking at the mean scores for the models of public relations found for the federal agencies by Pollack (1984), one sees that even 150 years after Amos Kendall served Andrew Jackson as history's first press agent, federal officials were still using similar one-way models of public relations (Grunig and Hunt, 1984).

The Internet has never had to fight such a battle. It simply is a tool for two-way communication. For example, its most popular early feature, that of e-mail, exists for no other reason than to allow individuals and organizations to communicate with each other in a symmetrical fashion. So while Web sites could conceivably be used like paper fliers or printed news releases, they quite simply aren't used this way.

Not only is the Web's ability to open up two-way lines of communication unprecedented. It's also easily achievable. It's easy to practice a two-way

symmetrical public relations on the web. Practicing two-way symmetrical public relations from the office isn't. You have to actually get up and go out of your office and meet people. You have to answer the phone and talk to people at inconvenient times. You have to organize town hall meetings and listen to community members and centers of influences. Within the office, it's simply easier to practice a one-way model of public relations.

Not on the World Wide Web. No meetings have to be set up. No one has to leave their desk. You don't even have to answer your phone to practice a two-way model of public relations on the Web. Instead of setting up a time and venue for a town hall meeting, you simply code in (or pay someone to code in) a chat room or bulletin board and post a schedule of meeting times. Instead of going out to meet people, you take a look at the comments they left on your survey. Instead of answering the phone and actively engaging a community member in conversation, you read the e-mail he or she sent you whenever you want, perhaps even forwarding it on to another party. The World Wide Web, as evidenced by the results of this content analysis, makes it easier within its environment to practice a two-way model of public relations.

The chink in the armor of this hypothesis, of course, is the assertion that the numbers collected by E. Pollack (1984) are simply too old. Much can happen in 15 years, and it could quite simply be that today there *is* a statistically

significant relationship between public relations models and Web interactivity, and we're just not seeing it with 15-year-old numbers. But since the interactivity of these Web sites was uniformly high, all 19 of the federal agencies in the sample would have to be using the two-way symmetrical public relations model for this to be true. That would mean that 17 of the 19 sites would have to have had a major public relations paradigm shift in those 15 years, 16 of which would have had to change from the press agentry and public information models. This scenario seems unlikely. Rather what we're likely seeing is a technology dictating the kind of public relations being used within that technology's environment, rather than a policy, a boss, or a corporate culture.

Suggestions for Future Research

Unlike other mediums, research of the Internet does not have the benefit of perfected methodologies that results from years of trial and error, such as with newspapers or television. The methodology of this content analysis has problems and should be further refined. Just as a color choice seems old hat now, perhaps a frames choice will be old hat tomorrow. Additionally, other interactive devices will surely emerge in the coming years, nay months, that would require a tweaking of the methodology.

Getting a grasp on the interactivity scoring idea is also important. Conducting a similar content analysis on a much larger sample should be a good way to see if the measure itself is bad or if fact is most Web sites are basically the same.

To clear up any misgivings due to the age of the E. Pollack (1984) data, another study in which the sampled organizations' people are surveyed and their Web sites content analyzed during the same period of time would be a good idea. Additionally, a much larger sample of organizations would provide more representation in each model of public relations and provide more reliable numbers.

Finally, on the qualitative side of the research method coin, a study in which public relations practitioners are surveyed on the impact that the World Wide Web has had on the model of public relations they use, both on the Web and in the office, would be useful. This way the interpretations of what various statistically significant (and insignificant) correlations and variances means could be verified through first hand accounts of the Internet's impact.

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